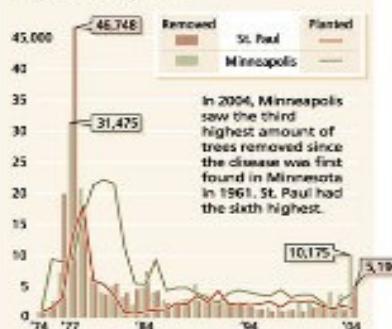


DUTCH ELM DISEASE (DED)

The American elm has shaded city streets and flourished in parks for decades mainly because it grows fast, lives long, and can withstand the various soil types and air pollution of urban settings. However, a fungus called *Ophiostoma novo-ulmi* has spread to thousands of elms across most of the eastern United States and threatens to destroy even more. This fungus infects healthy trees and eventually kills them within one to several years.

By the numbers (1974-2004)

Total public and private trees removed vs. total public and private trees planted*



St. Paul and Minneapolis spend much of the winter and early spring removing diseased trees. They mark trees for removal in the spring and summer months.

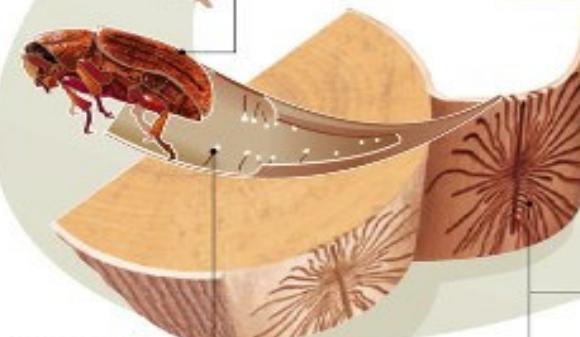
*St. Paul plants hybrid elms and 25+ other species of trees. Minneapolis plants very few elms and 20+ other species.

Actual size,
2-3 mm
in length



Elm beetle

The Native Elm Bark beetle is dark brown to black in color with tiny yellow hairs covering its body. When they emerge from the galleries they carry fungus spores to healthy trees, spreading the infection.



Fungal spores

When a tree is infected with the DED fungus, sticky spores are produced in the galleries and attach to emerging beetles.

Gallery

A female beetle will create a central tunnel for laying eggs. When the eggs hatch, the larvae feed on the bark and burrow out at right angles.

THE DISEASE CYCLE

Transportation

The fungus grows in the water conducting vessels of elms and travels with the flow to the limbs. The infection causes the tree to defend itself by producing a gum-like substance (tyloses) which, together with the fungus, plug the vessels preventing water uptake.



HEALTHY TREE
DISEASED TREE



Spotting it

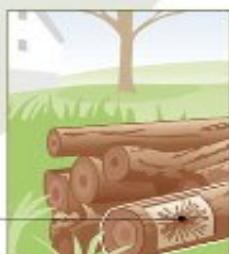
The first signs generally include wilting, dull green to yellow leaves that appear during the spring and summer. Dead branches and discoloration under the bark can also be an indication of an older infection.

Feed on healthy trees

The beetles fly from their galleries to feed on healthy trees and spread the disease. They eat away at the inner bark and wood of branch stems two-to-ten inches in diameter.

Root graft

DED can spread through root grafts. If the roots from a diseased tree grow near a healthy tree root, they can overlap and eventually fuse to become one.



After feeding on healthy elms ...

... the Elm Bark beetle will look for infected trees and logs to breed. A female can lay thousands of eggs in a piece of wood the size of a fireplace log.

Various treatments and preventions

There are many ways to treat the disease, but there are no cures. Treatments include: Chemical injections, fungicides, insecticides, pruning and isolation. The most extreme being to cut the tree down and dispose of the wood by burning or chipping.

Pruning (early infection)

Find where discoloration beneath the bark ends and cut eight to ten feet below that line.



Isolation (to interrupt and prevent root grafting with a diseased tree)

Primary barrier
Dig a trench 40 inches deep between diseased and healthy trees. Then refill and remove diseased tree.



Secondary barrier
This trench is to provide protection for the second closest trees to the diseased tree in case a seemingly healthy tree is infected.



Sources: Minneapolis Parks and Recreation Board, Forestry Section; Forestry Unit, Operations Section, Division of Parks and Recreation, City of Saint Paul, University of Minnesota Extension Service; United States Department of Agriculture, Forest Service

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